

COMMUNICATION SYSTEM USING GEOGRAPHIC POSITION DATA  
ABSTRACT OF THE DISCLOSURE

A wireless communication system employs directive antenna arrays and  
5 knowledge of position of users to form narrow antenna beams to and from desired users  
and away from undesired users to reduce co-channel interference. By reducing co-  
channel interference coming from different directions, spatial filtering with antenna  
arrays improves the call capacity of the system. A space division multiple access  
(SDMA) system allocates a narrow antenna beam pattern to each user in the system so  
10 that each user has its own communication channel free from co-channel interference.  
The position of the users is determined using geo-location techniques. Geo-location can  
be derived via triangulation between cellular base stations or via a global positioning  
system (GPS) receiver. The system can be optimized by applying partially adaptive  
processing algorithms, which are seeded by geo-location data.